$$\Rightarrow \boxed{U_n = \frac{\sqrt{3}(1+V_n)}{1-V_n} \quad \forall n \in \mathbb{N}}$$

c) $\lim\limits_{n\to+\infty} U_n = \lim\limits_{n\to+\infty} \frac{\sqrt{3}(1+V_n)}{1-V_n} = \sqrt{3}$ ($1+V_n \to 0$, $1-V_n \to 0$)

D'où $\boxed{\lim\limits_{n\to+\infty} U_n = \sqrt{3}}$